133 In the Carpathians, too, it is only the central area that was settled by the Ukrainian people; this is a rolling, hilly landscape, rising to some 7 000 ft. (Chornohora). The Carpathian foothills are fertile and thickly populated and rich in mineral wealth (petroleum in Boryslav and Jaslo, potassium and common salt in Kalush, brown coal).

b) Climate

● 132 The climate of Ukraine is moderate, a continental climate with big differences between summer and winter temperatures (s. table).

Table:

Area	Lat.	Longit.	Height (meters)	Temperature in Celsius				Rainfall (mm)
				av. Jan.		July	Diff.	
Lviv	49° 50	24° 21	298	7.6	-4.0	18.7	22.7	690
Kyiv	50° 27	30° 30	183	6.9	-6.0	19.3	23.3	590
Kharkiv	50° 00	36° 14	140	6.6	-7.8	20.4	28.2	507
Stalingrad	48° 42	44° 31	42	7.7	9.9	24.7	34.6	372

Compared with that of Russia, the climate of Ukraine is warmer and more favorable to the cultivation of the soil; compared with that of western countries, it is drier and much healthier.

Climatically, Ukraine falls into four provinces, viz.:

1. the province of boreal climate (cold in winter, moderately warm in summer) lies in the north and stretches to the line Chisinau — Poltava — Voroshylivhrad — Saratov. It is favorable for the growth of forest plants.

2. the province of the dry steppe climate (cold winters, hot summers, low rainfall) stretches farther south to the mountains. Rainfall is irregularly distributed and is often insufficient for tree growth. The grass steppe is characteristic of this province.

3. the province of alpine climate includes the Carpathians, the Yaila and Caucasus ranges. The most striking feature in the alpine climate is the drop in average temperature in inverse proportion to altitude and the higher rainfall.

4. the province of oceanic climate (southern coast of Crimea and that part of Sub-Caucasia that lies along the sea coast) has warm, rainy winters and hot, dry summers. 132

c) Rivers and Seas

The rivers of Ukraine are long and carry much water. They either flow to the Baltic (Syan, Veper, Buh and Narew and other tributaries of the Vistula), or to the Black Sea and the Sea of Oziv (Danube with tributaries, Dnister, Buh, Dnipro, Don with Donets etc.). The fact that the main watershed runs through the plains faciliates the construction of a network of canals connecting the seas. The Dnipro (1405 miles long and draining an area of 199 230 sq. miles) is the largest river in Ukraine. Historical settlements lie on its banks and the Ukrainian state developed along its course. For the people of Ukraine it is a sacred river. 133 487

The Buh (497 miles long, draining an area of 24 450 sq. miles) flows into the Black Sea west of the Dnipro. It has not much water and is not navigable.

South-west Ukraine is drained by the Dnister (856 miles long, area of basin 29615 sq. m.). Its course is not regulated either and it is not navigable. The rivers Prut and Cheremosh connect Ukraine with the Danube, while the Don and the Donets form the channel to the Sea of Oziv; the Kuban river drains the Kuban plain.

The Black Sea (area 158 462 sq. miles) connected by the Kerch Strait with the Sea of Oziv (area 14 615 sq. miles) has always been the channel of commerce between the eastern world and the countries round the Mediterranean. Its most important harbors, Odessa, Sevastopil, and Novorossijske are blocked by ice for a short time only; the Sea of Oziv, on the other hand, is too shallow to be navigable.

d) Flora and Fauna

The commonest tree in the northern forest zone is the pine; the birch, the alder, the ash and other species also occur frequently. In the west we find beech and larch, and in the Carpathians the spruce and the fir, and sometimes even the cedar. 137

● 132 The many abysses and canyons are a disadvantage. As there are no trees and therefore few birds, there are very many insects. There are also other pests and disadvantages connected with the climate. Ukraine has a continental climate, but it is milder than in Russia. The average yearly temperature of 8.10° Celsius corresponds to that of Erfurt (8.3°). The difference between the warmest month (July) and the coldest (January) is bigger than in Erfurt (18.8°) and increases towards the east (Lviv 23.4°, Kyiv 25.3°, Kharkiv 28.8°); the period of vegetation decreases in the same direction (Erfurt 218 days, Lviv 211, Kyiv 203, Kharkiv 201). The lack of clouds is favorable to growth and the ripening process.

Apart from mountainous areas, there is a rainfall in the North-west of 600 mm, in Galicia 700 mm, a figure which decreases for the central steppe to 500 mm and in the south steppe to 400 mm. In a limited territory round the Sea of Oziv and the Black Sea it is as low as 300 mm, the minimum in USA for successful agriculture. 6 million ha of the steppe often suffer from drought and bad harvests. The most important tasks of agriculture in Ukraine are to combat drought and to intensify methods of cultivating the soil; irrigation schemes in connection with the power station on the Dnipro which would ensure irrigation of 1—2 million ha, have not yet been carried out.

3. Utilisation of Soil

311 Arable land in Ukraine amounts to 66 % of the entire area, in the steppe even to 80 %. In France, Italy, Germany and Roumania the proportion is 41—45 %, while the average for USSR including Ukraine is only 31 %. Only in Hungary and Denmark we find a situation similar to that in Ukraine, though on a much smaller scale. Ukraine must rank as the first agrarian state in Europe.

The proportion of forest land is correspondingly low (12 %), though in the mountains and Polesya it accounts for 35—38 %; in the steppe it sinks as low as 4 %. Even the European countries that are poorest in forests, such as Italy and France, have 16—19 % forest land; the most of them reach the double of the figure for Ukraine

4: Allen H-4 (no date) 1941 RD1 Ukraine RD1

Kharkov, in its scenery and social conditions, resembles rather the neighbouring districts of the Government of Kursk, while in the south-east it is already really part of New Russia.

Climatic conditions on the left bank are rather less favourable than on the right bank of the Dniepr: there is a lighter rainfall which is not so evenly distributed; the winters are more severe and the region of Kharkov endures a distinctly 'continental' climate. Prince Shcherbatov, a former minister of the Imperial Government, writes that: 'One of the most important factors in agriculture is rainfall, which does not always occur under favourable conditions in the Ukraine. Most of the rain comes in summer and often takes the form of downpours which impede work in the fields and harvesting; and in the spring there is often not enough rain. Rainfall is better distributed on the right bank of the Dniepr than in other parts. The difficult climatic conditions in the Ukraine liken the average black earth harvests to average harvests in Central Europe on an average soil.'

During the nineteenth century conditions in left-bank Ukraine tended to favour the growth of a prosperous class of small farmers who supplanted the big landowners of the period of Peter I and Catherine II. These conditions derived from the shortage of labour on big estates which followed the opening up of the New Russian territories and from the wave of speculation which induced landowners to sell out their properties on the left bank of the Dniepr in order to participate in 'the rush' for the new lands. Left-bank Ukraine became a country of large peasant farms covering 10, 20, 30 and as much as 50 hectares, while a number of smaller 'working' landowners retained estates up to 100, 150 and 200 hectares. Land was worth in these parts 500 rubles (about £50 sterling on the pre-war exchange) a hectare.

At the same time the growth of these large farms in the Governments of left-bank Ukraine combined with a natural increase in the population to create a serious problem of 'over-crowding'. In the eighteenth century a numerous class of peasantry had existed who did not own any land of their own at all, but who merely possessed cottages and vegetable gardens and the right to graze their stock on common pasture lands. Following the Emancipation of the Serfs in 1861, the number of landless peasants showed a rapid increase. The small parcels of land allotted to the liberated serfs were soon redistributed between the thrifty and the shiftless; and the division of large estates did not contribute to the establishment of agricultural industries which might have provided a living for the less fortunate. Already in the eighties symptoms of over-population were noticeable

4: Allen H-4 (no date) 1941 RDl Ukraine RDl

● 132 AS A RULE THE CLIMAC CONDITIONS IN THE NEW RUSSIAN GOUVERNMENTS are much less favourable than in left-bank and especially right-bank Ukraine. They become worse going from west to east: the region of Odessa has the most equable climate and the shores of the Azov Sea the worst of all. In the east rainfall is insufficient, attaining in good years 50–40 cm. and in bad years not exceeding 20 cm., while in central and southern Ukraine it is 80 cm. and 40 cm. respectively. There is, furthermore, in the New Russian Governments an unbalanced distribution of rainfall: the country suffers from a shortage of rain in the spring when it is most needed, and from violent downpours in the summer. The climate of New Russia clearly inclines to aridity. In the old days the Black Sea steppes were covered for a short time in spring by a luxurious growth of high grass and wild flowers which disappeared in the following months. The steppe dries up completely during a period when the temperature reaches from 30° to 40° Centigrade and even the rain-storms of July and August cannot give new life to the parched ground. 241 Under such conditions field labour calls for special methods. The soil has to be ploughed deep, and great layers of earth have to be lifted—'the black fallow' which has not been dried out. The weak peasants' horses of the northern Ukraine are useless for such work. Ploughing in New Russia requires either two pairs of strong oxen or, better, mechanical traction. Before the last war, only wealthy landowners or agricultural colonies working on a co-operative basis could afford the latter method, which was introduced into New Russia as early as the end of the nineteenth century.

By force of circumstances farming in New Russia acquired quite a different character from that which had evolved in the historic countryside of old Ukraine: it even created a different landscape. 'Fruit-trees, especially cherry-trees, lend a charm to the Ukrainian landscape in the neighbourhood of Kiev and Poltava which recalls the rural landscapes of France. In New Russia, on the contrary, the lack of trees, the dryness of the climate, clouds of dust driven by the wind, lonely hamlets—all this goes to create an austere landscape which recalls rather the high plains of northern Castile. Only the endless cornfields with their undulating golden sea of wheat lend a [361] lyric note to these flat unwooded spaces. Villages there are not picturesque and in agricultural colonies practical considerations take precedence over the desire to beautify the environment. The houses, however, are more modern, more spacious and better built. Thatched roofs have given place to tiles or sheet-iron' (Brégy and Obolensky).

Wheat forms the basis of the agricultural wealth of New Russia. Before the last war, wheat covered 25 per cent of all the farmed

133 always favoured the formation of national groups, distinct from one another, and of States of relatively restricted size more or less dependent on their neighbours. Their development fills the whole history of Central Europe and they are only menaced by the German drive.

If we proceed in a north-easterly direction into Eastern Galicia, to the old 'Red Russia,' to-day *Malopolska* ('Little Poland' or 'Poland Minor'), we enter imperceptibly into the plains as the mountains become, little by little, hills which in turn are slowly obliterated. The hilly country becomes flat. Only the rivers, winding in the plain, interrupt here and there the monotony of the landscape. Advancing more and more towards the east, we always see the same plain without anything which resembles a natural limit, a plain which extends for hundreds and thousands of miles. We notice nothing at the frontier which separates Polish Galicia from the plain of Southern Russia (the Soviet Ukraine), but we also do not notice anything, when going towards the north, between the Ukraine and Russia proper.

Here we can go towards the ocean in the north and meet but rarely some chains of hills whose height is seldom more than three hundred metres.

Beyond the Carpathians, in the Ukraine, we enter the great plain which stretches, with only one interruption, the Urals, to Eastern Siberia.

132 The climate, too, changes almost imperceptibly and becomes a little colder and more continental towards the north and the east. However, the shroud of snow which covers the soil remains intact during three to five months in the whole of this immense part of the Continent, except, perhaps, along the shore of the Black Sea, where the climate is a little softer and where winter snow is rarer.

7:Bregy & Obolensky H-4, 5 (no date) 1940 RD1 Ukraine RD1

Apart from the severer climate of the Carpathian summits, that of the whole Ukrainian territory is nearly the same and can be characterized by the average temperature at Kiev, which is almost in the centre of the Ukraine, and which is an average of 7·3 degrees C., with an average minimum of −4·5 degrees C. and an average maximum of 20 degrees C.

This solid carpet of snow and these frozen rivers during long months are unknown in Western Europe.

The length of uninterrupted winter increases as one advances towards the north and the east. But on the whole extent of the Russian plain the average temperature in January does not rise above −4 degrees C. Human existence has to adapt itself to this fact. All the civilizations which have developed on the Russian plain have necessarily been influenced by it.

This aspect of the winter already tells us that from a climatic point of view the Ukraine belongs to a world quite different from the West and is connected with the great Russian continent. In the summer torrid and endless heat, broken by rare thunderstorms, such as are unknown in the West, confirms this statement. This very high summer temperature is not typical of the Ukraine alone but of the whole of Russia.

Beyond the frontier of the 'Soviet Republic of the Ukraine,' in the direction of the Volga and the Caspian Sea, the periods of heat are so long and intense that vegetation, which is progressively poorer, becomes almost non-existent. We enter a zone of semi-desert. But again we do so almost without noticing it, as the change of flora takes place slowly and imperceptibly from the Carpathians to the Caspian Sea.

In the greater part of the Ukraine the heat and dryness are sufficiently pronounced to hinder the growth of trees, but nevertheless insufficiently so as to kill all vegetation.

7:Bregy & Obolensky H-4, 5 (no date) 1940 RD1 Ukraine RD1

the Dnieper, the Boug, and the Dniester, all flow from /33
north to south, to empty into the Black Sea.

The climate is similar on the whole territory, with an /32
average 'multi-annual' temperature slightly higher in
the south and south-east, due to the great heat of the
months of July and August in these parts, with the
exception of a narrow border of the Black Sea, between
Odessa and the isthmus of Perekop, where the winter
and the autumn are very mild, which explains the
presence in this region of such plants as cotton (a plant
with a long period of growth) and trees so delicate as
those of the peach.

On the whole territory of the Ukraine the month
during which the average temperature is always the
highest (20 degrees C.) is July, and that during which
it is lowest (minus 4·5 degrees C.) is January.

The average rainfall varies between 25 and 80 centi-
metres per annum, with the dampest climate in the
north-western part. Everywhere there is more rain
during the summer.

This uniformity of the whole, which makes the task
of geographical description an easy one, seems at first
sight to make the division of the Ukrainian territory
into different zones impossible, while giving each zone
some original characteristics in the sphere of economic
geography.

Nevertheless, when going deeper into an analysis of /31
the question, we establish a division of the Ukraine into
two agro-climatic zones.

This separation is determined by climatic and agrarian
factors. There are differences of rainfall, of the soil,
and of flora.

The border of these two zones begins at the western
frontier of the Ukraine, on the 48th degree latitude
north, and rises in an almost straight line up to the

131 eastern frontier at the 50th degree latitude north, while cutting the territory into two almost equal parts.

132 In the northern zone (Zone 1) the rainfall is everywhere greater than 50 centimetres, while in the southern zone (Zone 2) it is less than 50 centimetres and varies between 25 and 50 centimetres.

134 The predominant soils of Zone 1 are poor *tchernozioms*, that is to say somewhat exhausted by the currents of water which have deprived them of their humus to a varying extent in different regions, and have brought to them some sand and clay from their sources.

On the contrary, the lands of Zone 2 are rich and complete *tchernozioms*.

137 Zone 1 comprises a vast forest region which, while spreading along the courses of the river becomes little by little a land of light woods, is yet characterized by the general presence of forests.

Zone 2 has no forests and is the true Steppe.

131 This separation is in practice nothing else but the frontier between the Steppe as such and the *lesso-steppe* (a Steppe with occasional woods)—a geographical term which has been accepted by Russian scientists for a long time.

This border is also that which defined the cradle of Russia, the ancient principality of Kiev, separating it from the savage Steppe of the nomads. Therefore, already at that distant epoch, the separation between these two agro-climatic zones existed in practice. Thus justified from a geographical point of view, the border between these two zones is all the more acceptable, as it is in tune with an historic reality since the establishment of settled populations.

000 Each time when we treat the question of populations in our study (the difference of density, of social distribution, and of ethnical composition), of agriculture

[See category 116, pp. 139–140. — Analyst]

133 and then forms the frontier line between the Governments of Podolia and Kherson and the neighbouring province of Bessarabia. It receives no very important tributaries in the Ukraine, though there is a fair number of smaller ones. Navigation is interrupted by the [502] Yampol rapids. For ordinary river craft an artificial canal affords a passage here, but steamboats cannot pass upstream. The depth of the water has lately been increased by a more scientific system of regulation.

The *Bug* rises in Russian Poland and reaches the Ukraine near Vlodava, to the north-west of Volhynia. It forms for some distance the boundary between the Ukraine and Russian Poland, and then flows through Austrian Galicia into the Ukraine at Volochysk. Its winding course follows a south-easterly direction, entering the Black Sea by a *liman*.

The chief tributaries of the Bug within the Ukraine provinces are, on the right bank, the Kedyma and the Chichekleya; and on the left bank the Ingul.

The *Donets* rises in the Government of Kursk, and enters the Ukraine to the north of Kharkov. It then flows to the south-east, leaving the Ukraine at the extreme north-eastern corner of Yekaterinoslav.

(3) Climate

132 Climatic statistics should generally be regarded as approximate.

The following recent figures are available for the South-west Territory—Tarnopol, although actually in Galicia, being taken as typical of the south-west of Volhynia, Berdichev of the south-east of Volhynia and the central part of the Government of Kiev, and Volkovints and Kamenets Podolsk of the Government of Podolia:

	Average Temperature (Fahrenheit).		
	January.	*July.*	*Year.*
Tarnopol . . .	22·5°	66·0°	44·1°
Berdichev . . .	22·3°	65·5°	45·0°
Volkovints . . .	20·5°	65·9°	44·4°
Kamenets Podolsk .	26·1°	68·5°	47·5°

The climate of Volhynia is more moderate than many eastern parts of Russia in the same latitude. Relatively mild winters are so common that the winter crops remain entire, and the climate is very beneficial for agriculture. Spring comes early (March), summer (at the end of May) is cool, autumn lasts long, and settled winter only begins in December. There are few droughts or periods of excessively wet weather. 132

The average annual rainfall in Volhynia varies from 20 to 24 in., in Podolia from 15 to 24 in., and is 20 in. in the Government of Kiev. July is the rainiest month, and after that June, May, and sometimes March.

The following are recent climatic statistics for Little Russia:

	Average Temperature (Fahrenheit).		
	January.	*July.*	*Year.*
Chernigov . . .	20·9°	68·0°	44·8°
Poltava	19·4°	70·3°	45·7°
Starobyelsk . . .	18·7°	73·6°	46·0°
Kharkov . . .	18·7°	70·7°	45·1°

The climate of Little Russia is closely connected with that of Central Russia, with its conflict between east and west winds. Winter tends to be long, though not so severe as in Central Russia, with frequent thaws, which sometimes greatly damage the winter wheat. The arrival of spring is apt to be uncertain, and is sometimes accompanied by a return of cold weather. Summer is moderately warm, and in the south-east sometimes hot. Autumn, with east winds, is remarkably dry.

The annual rainfall is inadequate, averaging 22 in. in the Government of Chernigov and 20 in. in that of Poltava, and varying between 21 in. in the west and 16 in. in the east and south-east of that of Kharkov. Droughts are common in the latter Government.

The climate of Odessa may be taken as more or less typical of New Russia, the mean temperature in January being 25·3°, in July 72·7°, and that for the whole year

132 49·3°. Drawbacks for agriculture in New Russia are the prevalence of north and east winds and an irregular and insufficient rainfall. The average rainfall at Yelisavetgrad is 17 in., at Odessa 16 in., at Lugansk 15 in., and at Nikolaev 14 in. The rains in April and May decide the harvest. June is the rainiest month, but from May to September there are droughts. Most places are largely dependent upon wells and ponds constructed in the ravines, which are frequent on the steppes.

The climate of the Ukraine, as a whole, is therefore continental, i. e. the variation between summer and winter temperatures is very great. Sudden variations of temperature are frequent. The rainfall is by no means abundant, and there is a progressive decline towards the south and south-east. The fact, however, that the bulk of the rainfall occurs in the summer favours agricultural operations, even where the annual amount of rainfall is comparatively low. It is only in New Russia that the country suffers seriously from drought.

(4) Sanitary Conditions

312 364 The Ukraine is very backward in regard to sanitary conditions. Less than half the towns have a satisfactory water-supply, and a very small percentage of them a regular drainage system.

164 158 Typhoid, diphtheria, and malaria are very prevalent. To the great majority of the people in the country, doctors are inaccessible, and even in the towns good hospitals and adequate medical attendance are very rare. In the matter of cleanliness, however, the Little Russians compare favourably with the Great Russians. 515

(5) Race and Language

Race

162 563 The population of the Ukraine is composed of a mixture of various races and nationalities, those chiefly represented being Little Russians, Poles, Jews,

161 Caucasian foreland. (7) This corresponds roughly

7. Kubyietych: The Distribution of Population in the Ukraine, page 11.

to the density of population in the Balkan countries.

133 The geographers have investigated the surface of the Ukrainian provinces and found that only 1.5% of the entire surface is more than 1000 meters high, barely 3.5% over 500 meters and 68.5% between 100 and 300 meters. Scarcely 1% of the Ukrainian population live in actual mountains, and surely more than half of all Ukrainians have never seen any mountains. (8)

8. Kubyievych: The Geography of the Ukrainian and the Bordering Areas, page 65.

•132 For decades scholars studied the climate, measured precipitation, heat and cold, and did not forget to check from what direction the wind blows. When they had made sufficient investigations, they established the fact that the Ukraine has an "oak climate", specifically in the damp, moderately cold northern and central Ukraine. Adjacent to this in the south is the "dry climate" zone with little precipitation, where there is less rain the farther southeast one goes. Moreover, geographers feel that it is significant that the Ukraine, along with the Carpathians, the Yaila Mountains in the Crimea, and the Caucasus have a mountain climate and that the southern shore of the Crimean Peninsula and the eastern coast of the Black Sea have a Mediterranean climate. Whereas the Ukrainians of the north would gladly renounce some of the 600 millimeters and more of precipitation which annually flood their fields, those of the south call upon God and all the spirits to send them a little more than their 200 millimeters of rain. But it need

132 not be one of those terrible thunderstorms which /15/ hover threateningly over the villages for half a day at a time, sending down ghastly lightnin or cloudbursts which wash away the humus. Nor should the moisture be accompanied by one of those icy snowstorms in which man and animal, shepherds and herds numbering in the thousands easily come to grief if they are caught by the impenetrable swirl of flakes on the open field.

137 The geographers who like to divide up the earth into zones studied Ukrainian soil with regard to its flora and found that north Ukraine down to Kiyev belongs to the region of north European forests where, besides oak, alder and birch, the spruce flourishes. In the south and southeast the dense forests open up into park landscapes and forest glades. The farther south one goes, the more scarce and sparse the islands of mighty oaks, lindens and elms become. This is the region of the wooded steppe which finally passes over into
134 the open, almost treeless grassy steppe. Seventy million hectares of Ukrainian soil is fertile black earth. It has erroneously been considered inexhaustible. Even though today the soil does not yet tolerate any artificial fertilizer, scholars are already racking their brains over the sad prospect that the natural fertility of black loam, the ideal of all farmers the world over, will be exhausted in about 50 years. Already at the time of the last czar, model farms and experimental stations sought ways and means to meet this danger.

*

000 Come along, comrade, and wander to the east toward the rising sun, into the land which at its greatest expanse is as long as the distance from Barcelona to Memel and as wide as the realm between the Brenner Pass and Kiel. Climb up from the merrily babbling Poprad through beech forests,

23: Shabad N-4 (no date) 1951 Rl Soviet Union Rl
Ukraine RDL

the east to the Carpathians in the west. They are drained by the Dniester River and its affluents, which flow in narrow, convoluted river valleys through picturesque wooded depressions. The watersheds, devoid of forests, constitute the basic cultivated areas; they are under wheat, corn, and tobacco. Black earth prevails in all these lowland sections of the Ukraine.

The Carpathians extend through the Ukrainian SSR over a distance of about 150 miles. They constitute a number of ranges, rising gradually toward the southeast, where they reach an elevation of more than 6,600 feet, with passes at points up to 3,000 feet above sea-level. The least accessible section of the mountains lies in Northern Bukovina (Chernovtsy Oblast). The Ukrainian Carpathians form a part of the wooded section of the mountain range. They are covered with deciduous trees on the lower slopes and with evergreens in the upper reaches. The chief rock formations are sandstone and schists with occasional volcanic intrusives. Above 5,000 feet, mountain meadow pastures prevail. There is no permanent snow cover. Isolated snow fields remain until June and reappear in September. Considerable rainfall (40 to 60 inches a year) feeds such important rivers as the Tisza, which flows southwestward, the Dniester, and the Prut, which descend the eastern slopes. In general, the Carpathians are easily accessible and are crossed by highways and rail lines.

The Transcarpathian Ukraine (until 1945 part of Czechoslovakia) lies on the southern slopes of the Carpathians and extends onto the Hungarian lowland, where it is bounded by the Tisza River in the south.

The Dnieper is the most important Ukrainian river. It rises in Smolensk Oblast, outside the Ukrainian SSR. Below Kiev it forms many islands and braided branches in its course. Until the construction of the Dnieper hydroelectric station (*Dneproges*), the rapids in the vicinity of Zaporozh'ye interfered with continuous navigation. Since the completion of the dam and the flooding of the rapids above the dam, the entire river has become navigable. The other important rivers of the Ukraine, the Dniester, the Southern Bug, and the Northern Donets (an affluent of the Don), are all less suitable for navigation.

Compared with the other regions of the European part of the USSR, the Ukraine has a rather temperate climate, although colder and more continental in the eastern part. Thaws occur frequently during the winter, summers are hot, especially in the south, while autumn is dry and continuously clear. Spring arrives early in the west and, together with

a long, warm autumn, provides excellent conditions for the development of agriculture. Average January temperatures vary from 27° F in the southwest to 14° F in the east, and July averages from 68° F in the north to 73° F in the south. The northern section of the Ukraine receives adequate rainfall (about 20 inches a year), but the south is much drier, having an average yearly rainfall of 9 inches. Most of the precipitation occurs in the first half of the year. During the summer, frequent violent rainstorms occur in the eastern sections.

The greater portion of the Ukraine lies in the wooded steppe and steppe zones, where black earth prevails. In the northern section, which lies in the forested zone, grassy marshes occur in abundance. In the wooded steppe zone the forest reserves have largely been depleted. Broad-leaved types, such as oak, maple, ash, and elm, occur only along the rivers and extend in green ribbons through gullies and ravines up to the watersheds. Characteristic local vegetation types are the dense growths of alder, willow, and poplar which border the inundated banks of the rivers and the many ox-bows and lakes which remain after the spring floods. The steppes on the watersheds have long been converted into rich wheat fields, a typical feature of the Ukrainian landscape.

Among the mineral resources which abound in the Ukrainian SSR, the primary raw materials for heavy metallurgy are most important. Scarcely anywhere else in the USSR are coal, iron, and manganese found within such proximity of each other as in the eastern Ukraine. The Donets Basin, or Donbas, with reserves of more than 90 billion tons, is the principal coal producer of the USSR. The Krivoy Rog iron mines produce iron ore of a high quality and metal content. Between these two sites are the rich manganese deposits in the area of Nikopol'. In the Donbas are extensive salt and mercury deposits. Petroleum fields lie in the foothills of the Carpathians, where salt, potash, and natural gas are also found. Another petroleum site is in the area of Romny (Sumy Oblast). The northern, marshy section of the Ukraine—Poles'ye—abounds in peat. Other minerals include polymetallic ores (Donets Basin), phosphorites, kaolin, limestone, marl, gypsum, and so forth.

The Ukraine is the most densely inhabited union republic of the USSR. Its 40 million inhabitants represent about one fifth of the total population of the USSR. The average population density is 180 per square mile; however, there is considerable variation throughout the region. The greatest concentration exists in the western Ukraine, along the foot of the Carpathians, where the density reaches 340 to 390 per square